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NIXON & VANDERHYE, PC
1100 N GLEBE ROAD
8TH FLOOR
ARLINGTON, VA 22201-4714

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AFTERGUT, JEFF H	

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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 09/486,183
Filing Date: August 17, 2000
Appellant(s): GRAY, IAN L

Stanley C. Spooner
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed December 10, 2004.

(1) Real Party in Interest

A statement identifying the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

A statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

(3) Status of Claims

The statement of the status of the claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of invention contained in the brief is deficient because it includes arguments in relation to what the Office position is and the appellant's belief in the incorrect interpretation by the Office. This is NOT part of the summary of the invention but rather is argument. Additionally, appellant's statement that claim 12 specifies "two steps of drawing" is misplaced as claim 12 appears only to define a single drawing step ("drawing through a pultrusion die a series of reinforcing fibers to form a pultruded fiber composite") and the "incorporating" step clearly takes place "prior to the drawing step". Only a single drawing step is defined in the claims and disclosed as part of the invention.

It should also be pointed out that the claim at hand has never been in "step plus function" format as the claim must use "step for..." language in order to

be in such a configuration and not "step of..." configuration. Regardless of this fact, appellant's invention does define clearly that the incorporating of the additional fiber material is by one of "splicing, interlacing and otherwise distributing" as defined in the disclosure.

Lastly, note that appellant's description of the common and well known techniques utilized to make composite structures is NOT found anywhere in the specification and is not considered part of the summary of the invention. The invention relates to pultrusion processing and not vacuum bag curing or hand lay up of composite materials. Additionally, appellants in their disclosure make no mention of pultrusion as a "combination of both extrusion and pulling a material through a die". As such, mention of the same in the summary of the invention is incorrect.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the issues in the brief is substantially correct. The changes are as follows: Whether claims 12-14, 16, 18, 20 and 21 are patentable over Vane as being anticipated under 35 USC 102(b) or obvious under 35 USC 103; whether claims 12-14, 16, 18, 20 and 21 are patentable under 35 USC 103 as being obvious over Vane in view of any one of Kalnin, Durand et al, or Gorthala et al; whether claim 15 is patentable under 35 USC 103 as being obvious over Vane in view of any one of Kalnin, Durand et al, or Gorthala et al and further taken with any one of Yokota et al or Street; whether claims 19 and 20 are patentable under 35 USC 103 as being obvious over Vane in view of any one of Kalnin, Durand et al, or Gorthala et al further taken with any

one of Martin or Krutchkoff, and; whether claims 21-24 are patentable under 35 USC 103 as being obvious over Vane in view of any one of Kalnin, Durand et al, or Gorthala et al further taken with the applicant's admitted prior art. It should be pointed out that appellant essentially does not argue any of the references other than Vane and takes the position that if the Vane reference failed to teach what it was applied for then all of the rejections fall.

(7) Claims Appealed

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

The following is a listing of the evidence (e.g. patents, publications, Official Notice, and admitted prior art) relied upon in the rejection of the claims under appeal.

(A) Listing of Prior Art of Record

5,055,242	Vane	10-1991
3,691,000	Kalnin	9-1972
5,882,460	Durand et al	3-1999
6,007,655	Gorthala et al	12-1999
5,266,139	Yokota et al	11-1993
4,428,992	Street	1-1984
4,983,453	Beall	1-1991

Gabriele, Michael, "Pultrusion's Promise", Plastics Technology, March 1995, pages 36-40.

Martin, Jeffrey, "Pultrusion", Engineered Materials Handbook Volume 1, COMPOSITES, 1987, pages 533-543.

Krutchoff, Lydia, "Pultrusion, Part 1-Process Coverts Thermoset Materials Into Finished Shapes Continuously", Plastics Design & Processing, July 1980, pages 34-38.

Admitted Prior Art as set forth in the specification at page 1, lines 4-9 where the description of the use of pultrusion to form aircraft wing or fuselage skin stringers.

(B) Brief Description off Prior Art of Record

Vane suggested that it was known to form a reinforcement which included additional reinforcing materials which were added as patches 3a and 4a in the layers of reinforcement and incorporated into the reinforcement by stitching ("otherwise distributing the additional reinforcing material into the reinforcing fibers). This reinforcement which was formed using the techniques defined in Figure 1 was subject to a pultrusion process (as defined in Figure 3) wherein the reinforcement was formed in the forming device 14, accumulated as necessary with the accumulator 15 and impregnated with a resin and pultruded through a pultrusion die 28 to form a composite article from the reinforcement. The patches were used to provide additional reinforcement (strength) in those areas where the same was desired.

Any one of **Kalnin**, **Durand et al**, or **Gorthala et al** suggested that it was known at the time the invention was made to incorporate fiber materials of varied composition in a fiber reinforced composite article (a pultruded product for example) in order to vary the strength properties in the finished assembly. Each

utilized more than one kind of reinforcing material in order to impart desired strength values to the finished assembly.

Either one of **Yokota et al** or **Street** suggested that it was known at the time the invention was made to splice fibers together in the manufacture of composite articles on a continuous basis and that this splicing would have been understood as a suitable means for addition of reinforcement in a composite article.

Any one of **Beall**, **Gabriele** or **Martin et al** suggested that it was known in the art of pultruding to impregnate the fiber reinforcement in the pultrusion die rather than impregnation of the material in a bath disposed outside of the die.

Either one of **Martin et al** or **Krutchoff** suggested that those skilled in the art of pultrusion would have known to incorporate either a non-woven or woven material as the reinforcement in pultrusion as such materials are known alternative.

The appellant's **admitted prior art** suggested that it was known at the time the invention was made to form a portion of an aircraft wing or fuselage skin stringer from a fiber reinforced pultruded composite material.

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claims 12-14, 16, 18, 20 and 21 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Vane.

Vane suggested that it was known at the time the invention was made to form a composite article via a pultrusion operation, see Figure 3 and note that 28 is a pultrusion die through which a reinforcement is shaped. In particular, the reference suggested that one skilled in the art would have provided a reinforcing material 13 in a reinforcing material producing means 14 and fed the same to a pultrusion die 28 where resin was injected into the reinforcement by suitable injecting means 31 from supply 32. the formed article is then suitably cured by a curing means 26 in order to solidify the resin therein. The reference taught that the forming means 14 for forming the fabric (as described with reference to Figure 1) included the introduction of independent reinforcing components 3a, 4a can be added to the various plies of reinforcement 1-6 formed from reinforcing fibers in order to provide additional reinforcement at a required local in the finished end product, column 5, lines 60-65, column 2, lines 50-57. The reference suggested that various types of yarns would have been suitable for the operation including the use of glass fibers as well as carbon fiber for the reinforcement. The reference suggested that all of the layers 1-6 as well as the patches 3a and 4a were subjected to a stitching operation where stitches 12 are disposed through the assembly of fiber layers together (note that such a stitching operation is clearly at least one of splicing, interlacing or otherwise distributing in the reinforcing fibers prior to the drawing step additional fibers). The reference is silent as to state that the fiber material formed from Figure 1 and processed in the pultrusion operation of Figure 3 would have had a uniform cross sectional

shape in the finished assembly (subsequent to the pultrusion operation), however appellant has expressly stated on page 13 of the brief that:

"Vane does disclose a rudimentary pultrusion production process in Figure 3. However a review of Figure 3 illustrates that the reinforcing material 13 is presumably analogous to Appellant's claimed reinforcing fibers and are treated in precisely the manner of conventional pultrusion products. The benefit of such pultrusion method is that the output products essentially have **a constant cross-sectional are and shape.**"

The appellant is advised that the reinforcing material 13 of Vane is the reinforcement which was formed according to the processing of Figure 1 as discussed above (note claims 1, 16, and 17 of Vane as well as claim 12 of Vane). The reference to Vane pulled the material through a die and shaped the same along with the resin into a shape which coincided with the shape of the die to provide a constant cross sectional area end product (note that in the die one skilled in the art would have expected that the resin would have filled in the voids present in the reinforcement and resulted in a constant cross sectional shape). It should be noted that incorporation of the reinforcing patches 3a and 4a in the finished assembly would have varied the density of reinforcement in the finished pultruded product (increased the density of reinforcement where the patches were present and reduced the amount of resin in these regions) and would not have varied the thickness of the finished pultruded assembly. The reference failed to state that the additional reinforcements 3a, 4a would have been provided from a fiber material different from the fiber material of the other plies in the composite, however in order to provide additional reinforcement in a localized region, depending upon the necessary characteristics of the finished assembly,

one skilled in the art would have understood that fibers of a different type would have been provided in different regions of the finished assembly. It would have been obvious to one of ordinary skill in the art of pultrusion to provide different fibers in additional pieces added to the reinforcement plies in Vane in order to alter the reinforcing properties of the finished assembly in the process of making a composite having a varied strength characteristic along the length of the same.

With regard to claims 13 and 14, note that the inclusion of different types of fibers would have necessarily resulted in variance in fiber tenacity and fiber modulus. Regarding claim 16, note that the plies were stitched together thus forming a finished assembly which included the interlaced additional reinforcement. Regarding claim 18, the reference to Vane suggested that those skilled in the art of pultrusion would have coated the filament reinforcement prior to introduction into the pultrusion die. Regarding claim 20, note that the laying up of the fibers according to the techniques of Vane to form the perform provided the fibers in the form of a nonwoven. Note regarding claim 21 that the reference to Vane suggested the formation of a finished fiber reinforced composite assembly.

Claims 12-14, 16, 18, 20 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vane in view of any one of Kalnin, Durand et al or Gorthala et al.

Vane is discussed above and appellant is referred to the same for a complete discussion of the reference. The reference failed to expressly suggest that one skilled in the art would have utilized different fiber material in the

additional layers which were added in order to impart additional strength in the localized regions where the same were applied. The reference to either one of Kalnin, Durand et al or Gorthala et al suggested that those skilled in the art would have understood that the fibers from one layer to another layer would have been varied in order to attain the desired strength in the finished assembly. Namely the reference to Kalnin suggested that those skilled in the art would have employed both fibers of glass and carbon in the fiber reinforced composite in order to attain a finished composite of the desired stiffness and strength. Regarding Gorthala, the reference suggested that those skilled in the art would have applied plural layers of fibers in a pultrusion operation wherein various layers of the fibers included fibers of differing compositions in order to achieve the desired strength in the finished assembly. Durand et al suggested that one skilled in the art would have utilized various types of fibers in a pultrusion in order to impart the desired characteristics of the finished product, column 2, lines 45-55. It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate a different type of reinforcing fiber in the composite of Vane in order to alter the stiffness and/or strength in the finished assembly as such was known in composite manufacture as suggested by Kalnin, Durand et al or Gorthala et al.

Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Vane in view of any one of Kalnin, Durand et al or Gorthala et al as set forth above further taken with any one of Yokota et al or Street.

The references as set forth above suggested that those skilled in the art at the time the invention was made would have intermixed various types of fibers

together in order to impart the desired final strength characteristics to the finished pultruded composite. It should be noted that the additional reinforcement was added at various points along the length of the product. The references failed to teach that those skilled in the art of composite article manufacture and in particular pultrusion would have known at the time the invention was made to incorporate fibers along the length of the composite article via a splicing operation where lengths of the reinforcement were assembled together in order to vary the fiber content along the length of the finished assembly. However, the use of splicing in the process of manufacturing composite articles on a continuous basis was known per se as evidenced by either one of Yokota et al or Street. More specifically, Yokota suggested that it was known at the time the invention was made to splice fiber tows together in a pultrusion operation in order to provide a continuous supply of the fiber tow in the operation. Street suggested that in order to provide continuous supplies of fiber in composite article manufacture the ends of the fibers would have been spliced together. Because Vane suggested that those skilled in the art at the time the invention was made would have incorporated various kinds of reinforcement along the length of the pultruded part and it was known to splice fibers together to provide a supply of the same in a pultrusion operation, it would have been obvious to one of ordinary skill in the art at the time the invention was made to employ splicing as a technique to intermingle the various fibers as such techniques were known as suggested by Yokota et al or Street in the process as set forth above by the combination of Vane with any one of Kalnin, Durand et al or Gorthala et al.

Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Vane in view of any one of Kalnin, Durand et al or Gorthala et al as set forth above further taken with any one of Beall, Gabriele or, Martin et al.

While the references as set forth above suggested that those skilled in the art when pultruding would have impregnated the reinforcement prior to entry into the shaping die (Vane employed an impregnation bath prior to the die), the references failed to teach that that it was known per se as an alternative in the art of pultrusion to impregnate the filament reinforcement in the die (rather than prior to introduction into the same in a bath). The references to any one of Beall (column 5, lines 50-66), Gabriele (page 38, lines 9-29 of the left column, note that Gabriele suggested that injection was preferred due to the reduction in emissions from the resin material), and Martin et al (page 534, right column, lines 3-15 and lines 44-47, for example) suggested that it was known to introduce the resin to the reinforcement either prior to entry into the die or at the die itself. It is well settled that where, as here, two equivalents are interchangeable for their desired function, an express suggestion of the desirability of the substitution of one for the other is not needed to render such substitution obvious, In re Fout, 213 USPQ 532, In re Siebentritt, 152 USPQ 618. It would have been obvious to one of ordinary skill in the art at the time the invention was made to employ resin impregnation at the die as opposed to prior to entry into the die as such were well known alternatives in the art as evidenced by any one of Gabriele, Martin et al, or Beall in the process of pultruding as set forth above by Vane as modified by any one of Kalnin, Durand et al or Gorthala et al.

Claims 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vane in view of any one of Kalnin, Durand et al or Gorthala et al as set forth above further taken with any one of Martin et al or Krutchkoff.

The references as set forth above suggested that those skilled in the art would have incorporated a reinforcement in the form of a nonwoven in the pultrusion operation. The reference to Vane failed to expressly state that one skilled in the art would have utilized a woven material during pultrusion. The art is replete with examples where one employed a reinforcement in the form of a woven material during pultrusion and one skilled in the art would have readily appreciated that the form of the reinforcement was a function of the desired strength characteristics one wished to attain in the finished assembly as evidenced by either one of Martin et al (page 537, left column line 1-page 538, middle column, line 27) or Krutchkoff, page 37, under the heading "Reinforcement Materials", suggested that one skilled in the art would have readily appreciated that either non-woven or woven fabric material reinforcements would have been suitable in the pultrusion operation and that the selection of a non-woven or a woven fabric material would have been a function of the desired strength characteristics one wished to attain in the final assembly. It would have been obvious to one of ordinary skill in the art at the time the invention was made to employ either non-woven or woven reinforcement in a pultrusion operation as such were art recognized reinforcements useful in pultrusion dependent upon the desired strength characteristics needed in the finished assembly as suggested by either one of Krutchkoff or Martin et al in the

operation of pultruding as set forth above by the combination of Vane in view of any one of Kalnin, Durand et al or Gorthala et al.

Claims 21-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vane in view of any one of Kalnin, Durand et al or Gorthala et al as set forth above further taken with the appellant's admitted prior art (see page 1, lines 4-9 of the specification).

The references as set forth above in paragraph 6 suggested that those skilled in the art would have known to incorporate a reinforcement in the continuous reinforcing perform at the local where one desired the increase in strength and/or additional properties. The references clearly produced a composite article via the pultrusion operation in Vane. There is no indication that the pultruded part was intended for use as an aircraft skin stringer where an aircraft foil incorporated the stringer therein. However, the appellant has admitted at page 1 of the specification that: "It is known to manufacture by pultrusion, composite structural members for use as skin stringers for aircraft wing and fuselage skins, for example." Clearly, in order to provide reinforcement where desired, one skilled in the art at the time the invention was made forming a pultruded composite member such as a skin stringer for aircraft wings and fuselage would have readily appreciated that it would have been obvious to utilize the techniques as set forth above in the combination of Vane with any one of Kalnin, Durand et al or Gorthala et al to form such conventional pultruded stringers as admitted by appellant as was known in the art of pultrusion.

(10) Response to Argument

Initially, appellant argues that the claims were in step plus function format previously and that the amendment after final eliminated this language by clearly reciting the step performed (the language "by at least one of splicing, interlacing, and otherwise distributing" added by amendment). The appellant is advised as noted above that in order for the claim to be in step plus function format the claim must use the language "step for...". In any event, the reference to Vane clearly employed stitching 12 to employ a distributing technique for incorporation of the patch material 3a and 4a in the fiber assembly.

The appellant takes the position in his argument for patentability of the claims that the reference to Vane failed to teach the incorporation of additional fibers in the reinforcement by one of stitching, interlacing or otherwise distributing the additional fibers in the reinforcing fibers prior to the step of pultruding the reinforcement in a pultrusion die wherein the finished composite article produced after curing of the material and at the exit of the pultrusion die does not have any variance in cross sectional shape. The appellant alleges, without any evidence whatsoever, that if one pultruded the reinforcement of Figure 1 with the patches 3a and 4a therein in the pultrusion operation of Figure 3 then the pultrusion die would clog. The appellant does NOT address any of the other prior art references applied in the rejection and it is therefore assumed that appellant is in agreement with the Office interpretation of these references. The appellant is correct in his interpretation that if the Vane reference falls, all rejections presented will likewise fall. The same can be said in that if there are no deficiencies found with the Vane

reference (if the Vane reference is found to have the features identified above by the examiner) then the rejections should be sustained. Appellant's arguments in regard to Vane are respectfully traversed.

Appellant argues regarding the reference to Vane that the teachings of Figures 1 and 3 are "different embodiments" in the disclosure and are not used together (and that it would not have been obvious or possible for one to combine the features of Figure 1 with those of Figure 3 in the reference). This argument is made to support appellant's contention that the reference to Vane does not teach the addition of additional reinforcement prior to the pultrusion operation in order to provide a pultruded article with varying strength along the length of the pultruded product. This line of reasoning has not been found to be persuasive. Appellant is more specifically referred to: (1) the abstract of the disclosure

> "A process for continuously forming reinforced articles (24) which includes *producing a reinforcing material (13) having a plurality of superimposed layers (1-6), stitching together said layers* (1-6), wetting *said reinforcing material* (13) with a matrix material (7, 8 or 19), *forming the wetted reinforcing material* and curing or consolidating the matrix material. Each layer (1-6) of *the reinforcing material* (13) includes a plurality of unidirectional non-woven yarns or threads (10) laid side-by-side, the yarns or threads (10) in at least some of the different layers (1-6) extending in different directions. Forming of *the wetted reinforcing material* may be effected by moulding, *pultrusion* or by wrapping wetted reinforcing material around a mandrel or former (25). " (emphasis added);

(2) column 3, lines 34-51

> "The *wetted reinforcing material* may be formed in any suitable manner, as by moulding, pressing, *pultrusion* or wrapping *the wetted reinforcing material* around a mandrel or former. Preferably, *an accumulator is provided between means for producing the reinforcing material and means for forming the wetted reinforcing material*, the accumulator serving *to compensate for any slight discrepancies in the speed of operation of the*

> *means for producing the reinforcing material and the forming means and to provide a supply of reinforcing material in the event that there should be a temporary interruption in the operation of the means for producing the reinforcing material.* The accumulator may take the form of a frame having a plurality of parallel supports or rollers thereon over which the reinforcing material is looped so that it hangs down in folds from said supporting means or rollers." (emphasis added)

noting that in Figure 3 an accumulator15 is disposed between the reinforcing material producing means 14 and the pultrusion die 28, and; (3) column 4, lines 15-19

> "According to another embodiment of the present invention the wetted reinforcing material is formed by passing it through a die, preferably a pultrusion die."

Clearly, one skilled in the art viewing the reference to Vane would have understood from a complete reading of the reference that the description of Figure 1 related to the process used by one skilled in the art to manufacture a reinforcement which was subsequently subjected to a moulding operation wherein one of the suitable moulding operations included the step of pultruding the reinforcement in a pultrusion die. As expressly pointed out by the reference to Vane in Figure 1, the patches were added to the other plies of reinforcement in order to impart additional strength or thickness to the reinforcement and the inclusion of the reinforcing patches in the reinforcement would have varied the fiber density in the finished assembly without altering the final shape of the finished assembly. The appellant has been repeatedly referred to column 5, lines 60-65 of Vane. Appellant is additionally referred to column 2, lines 50-57 of Vane where the reference suggested that the final parts would have contained different

densities of fibers in the finished assembly. It should be pointed out that the pultrusion operation, as admitted by appellant, would have produced a composite product which had uniformity in cross sectional shape (that is to say, the reinforcement plus the impregnating resin are shaped in the die 28 to provide a continuous product of uniform cross sectional shape). The addition of the additional fiber patches 3a and 4a would have accounted to an increase in the fiber density in the regions where they were disposed in the finished assembly (the pultruded and cured composite) where less resin would have been present. As such, the die during the pultrusion operation would not have clogged as the additional fibers would have merely received less resin as they exited the die in the pultrusion operation. Additionally, as the assembly was stitched together, one would have expected that the final stitched reinforcement, prior to pultrusion, would have had nominal increase in thickness and such thickness increases would have been tolerated by the size of the die (and uniformity achieved by the flow of the resin in the die during the pultrusion operation). It should be pointed out that appellant's argument that the reference to Vane failed to teach uniformity in cross sectional shape is seemingly suggesting that such uniformity is required prior to the reinforcement being drawn through the die, while in fact the claims clearly require that the uniformity in cross sectional shape is related to the end product which exited the die. Appellant has admitted that the end product being pultruded by Vane has uniformity in cross sectional shape.

The appellant is additionally advised that the claims of Vane make it clear that the operation as defined in Figure 1 was in fact utilized to make the reinforcement 13 in Figure 3 of Vane as expressed below:

1. A process for forming a reinforced article, comprising the steps of:
(a) continuously supplying yarns or threads to a first station,
(b) continuously producing at said first station a reinforcing material having a plurality of superimposed layers, each layer consisting of a plurality of unidirectional non-woven yarns or threads laid side-by-side, the yarns or threads in at least two of the different layers extending in different directions,
(c) stitching together said layers,
(d) continuously passing the reinforcing material to a wetting station,
(e) wetting said reinforcing material at said wetting station with a matrix material,
(f) continuously passing the wetted reinforcing material to a forming station,
(g) at said forming station forming the wetted reinforcing material to the shape of an article, and
(h) curing or consolidating the matrix material to produce said article.

16. A process according to claim 1, wherein the wetted reinforcing material is formed by passing it through a die. (emphasis added)

17. A process according to claim 16, wherein the die is a pultrusion die. (emphasis added)

One reading the claims of Vane would have understood that stitching would be compatible with the pultrusion process. Additionally one would have understood that where additional reinforcement was desired the patches 3a and 4a would have been added to the reinforcement prior to the pultrusion operation.

Appellant additionally notes that use of the reinforcing patches 3a and 4a of Figure 1 would not have been used in the operation of Figure 3 as the existence of the same in the pultrusion die would necessarily clog the die and the pultrusion operation would be inoperable. Applicant is referred to 35 USC 282:

> "A patent shall be presumed valid. Each claim of a patent (whether in independent, dependent, or multiple dependent form) shall be presumed valid independently of the validity of other claims; dependent or multiple dependent claims shall be presumed valid even though dependent upon an invalid claim. Notwithstanding the preceding sentence, if a claim to a composition of matter is held invalid and that claim was the basis of a determination of nonobviousness under section 103(b)(1), the process shall no longer be considered nonobvious solely on the basis of section 103(b)(1). The burden of establishing invalidity of a patent or any claim thereof shall rest on the party asserting such invalidity." (emphasis added).

As pointed out above to appellant, the claims of Vane suggested that one would have formed the stitched reinforcement after wetting the same in a pultrusion operation. While appellant argues that 282 has nothing to do with the question of obviousness herein, it in fact does. It is assumed that the claimed invention of Vane is operable and valid. As the claims in Vane appear to expressly indicate that the processing performed to make the reinforcement of Figure 1 was used in the pultrusion operation of Figure 3, it is presumed that the operation works as claimed. It is presumed that the operation as claimed will function. Appellant has the burden to establish that the operation of Vane will not work in the manner described by the patent. Appellant has failed to meet the burden as the appellant has provided no evidence that the die in Vane would have clogged in operation. Additionally, one would not have expected that the die would clog in Vane as the additional reinforcement would have been stitched with the other layers of reinforcement and the density of the reinforcement would change but the cross sectional shape of the same would be identical in those regions where there was reinforcement to those where the additional reinforcement was added. This is because as the material is pulled through the die the resin is allowed to flow and

become an integrated matrix for the reinforcement and as such those regions with additional reinforcement would have a greater density of reinforcement therein and a lesser amount of resin (thus resulting a constant cross sectional shape and varied strength properties along the length of the same). Thus, there would be no clogging in the die in the operation of Vane.

As appellant has not addressed any other reference applied against the pending claims (more specifically the teachings of Kalnin, Durand et al, Gorthala et al, Yokota et al, Street, Beall, Gabriele, Martin et al, Krutchkoff and the appellants admitted prior art), it is presumed that appellant's representative agrees with the Office interpretation of these references and their relevant teachings.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

Jeff H. Aftergut
Primary Examiner
Art Unit 1733

JHA
January 12, 2005

Conferees

Steve Griffin
SPE Art Unit 1731

Chris Fiorilla
SPE Art Unit 1734

NIXON & VANDERHYE, PC
1100 N GLEBE ROAD
8TH FLOOR
ARLINGTON, VA 22201-4714